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10 April 1964

MEMORANDUM FOR THE RECORD

SUBJECT: Affect of Fuel Sequencing and
Large Mission Reserves on Fuel
Temperatures

1. The operational mission profiles contemplated include instances where fuel reserves at the initiation of refueling are approaching 15,000 pounds. Since fuel tank no. 3 is the last tank to be used and no. 5 the next to last tank to be used, a 15,000 pound reserve would result in a full no. 3 tank (approximately 10,000 pounds) and a partially full no. 5 tank (approximately 5,000 pounds). Just prior to refueling, fuel is transferred forward to the no. 1 tank for a better low speed c.g. position, but currently this quantity is limited to 4,000 pounds to allow for the maximum "g" capability and, in addition, the system will transfer first from no. 5 tank until empty. It is evident from the above that the no. 3 tank remains full throughout the mission getting progressively hotter unless it is needed during an emergency condition requiring less reserve. At this time, it is far too hot to be useable.

2. The probable Lockheed solution will be to incorporate a manually actuated position on the forward transfer switch which will allow the fuel from the no. 3 tank to be transferred first regardless of how much fuel is in the no. 5 tank. Also the maximum transferable limit of 4,000 pounds will be lifted so that a larger quantity will be transferred from no. 3 to no. 1 and subsequently burned.

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Aircraft Systems Division
(Special Activities)

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